UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,022	09/09/2003	Joseph Bibb Cain	GCSD-1464 (51331)	2811

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EXAMINER
NGUYEN, HANH N

ART UNIT	PAPER NUMBER
2668	

DATE MAILED: 12/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/658,022	CAIN ET AL.
	Examiner	Art Unit
	Hanh Nguyen	2668

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>*Response filed on 11/7/05*</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>*1-37*</u> is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>*1-37*</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

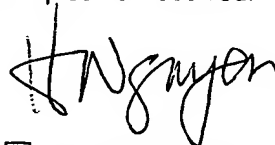8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All   b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

HANH NGUYEN
PRIMARY EXAMINER

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date <u>*9/26/03*</u>.

4)☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3-14, 16-25 and 27-37 are rejected under 35 USC 103(a) as being unpatentable

over Bahl (US Pat. 6629,151 B1) in view of Ciscon et al. (US Pat. 6,832,249 B2).

In claims 1,14 and 25, Bahl discloses a mobile ad hoc network (MANET) (wireless

network 118, fig.3, col.16, lines 5-22) comprising: a plurality of mobile nodes (portable

computers 120, 130, see fig.3), each comprising a wireless communications device (see fig.1,

wireless network interface 53/ wireless modem 54) and a controller (processing unit 21, fig.1).

See col.2, lines 60-62, col.3, lines 58-67 and col.16, lines 5-22. The controller operating in

accordance with a multi-layer protocol hierarchy for (see fig.2) (processing unit 21 executes

programs modules comprising application programs 36, program modules 37, program data 38,

protocol layers 100-112, see col.3, lines 27-35 & col.4, lines 25-55).

at an application layer, establishing a quality-of-service (QoS) threshold (application

layer 100, see fig.2);

at a QOS support layer below the application layer, determining whether to

require data reception acknowledgements based upon the QOS threshold (link layer 110

supporting acknowledgement, col.4, lines 40-50);

at a QoS coding layer below the QOS support layer, encoding data from the

application layer for transmission to at least one destination mobile node (allowing receiver to correct errors in received packet by using forward error correction, see col.8, lines 15-25) ;

at a QOS route selection layer below the QOS coding layer, selecting at least one route to the least one destination mobile node based upon the QOS threshold (network layer 108 defines address and routes data across network to destination, see fig.2, col.4, lines 35-38);

at least one lower protocol layer below the QOS traffic layer, cooperating with said wireless communications device to transmit data to the at least one destination mobile node via the at least one selected route (physical layer 112, Mac sublayer, logical link control (LLC), see col. 4, lines 43-55 .

Bahl further discloses a QOS traffic layer (data link layer 110, fig.2) below the QOS route selection layer (network layer 108, fig.2) controlling data traffic flow based upon the QOS threshold (Data link layer 110 controls data, blocks, packets transmissions to ensure error-free transmission). See col.4, lines 40-50. Bahl does not disclose establishing a QOS threshold from among a plurality of different QOS thresholds based on a given type of data to be transmitted to at least one destination node.

Ciscon et al. discloses an application layer (see fig.2) operating in network element 304 (fig.3) is monitored by a control system 300 (see col.9, lines 10-30). A QOS threshold is established (network monitor 308, fig.3, defines error seconds threshold such as a maximum of 44 bit errors have occurred, see col.10, lines 12-25) from among a plurality of different QOS thresholds (error seconds, packet loss rate, transmission time relate to latency, jitter, bandwidth throughput, see col.10, lines 5-12) based on a given type of data (time sensitive data) to be transmitted to at least one destination node(sending to network element 314, fig.3, see col.9,

lines 43-50). Another type of given QOS data sent to a particular destination is media. See col.11, lines 15-20.

Therefore, it would have been obvious to one ordinary skilled in the art to apply the plurality of QOS thresholds of Ciscon et al. into Bahl 's application protocol layer in order to establish QOS communications between mobile devices in ad hoc network. The combination of the two references determines the QOS threshold based on a given type of data to be transmitted to a destination so that the transmitted data should be acknowledged without error occurred.

In claims 3, 4, 5, 16, 27, 28 and 29, Bahl disclose the at least one lower protocol layer comprises a radio adaptation layer (logical layer control) providing an interface for the QOS traffic layer, a media access layer (MAC sublayer) and a physical layer (physical layer 112). See col.4, lines 42-55.

In claims 6, 7, 17, 18, 30 and 31, Bahl discloses at the physical layer, said controller cooperates with said wireless communications device to determine a QOS metric for the at least one selected route (signal received from base station, see col.8, lines 50-60); wherein, at the QOS route selection layer, said controller determines whether the QOS metric falls below the QOS threshold (determining when a certain threshold of signal is reached, computer 120 performs handoff from bass stations 124 to 128, se col.8, lines 57-65); and wherein, at the physical layer, said controller cooperates with said wireless communications device to adjust at least one signal characteristic (transmission power) based upon a determination that the QOS metric has fallen below the QoS threshold (increasing transmission power as the computer 120 moving away from base station and reducing transmission power as the computer 120 moving toward the base station and still level of quality connection, see col.9, lines 1-15).

In claims 8, 19 and 32, Bahl discloses at the QOS support layer (logical link control), said controller determines whether to admit traffic from other mobile nodes based upon respective QOS route requests received therefrom and an internal QOS metric (determining whether WNIC 122 support link layer acknowledgement, col.7, lines 52-65).

In claims 9 and 20 and 33, Bahl does not discloses the QOS route requests have respective traffic flow identifiers and second Qos thresholds associated therewith; and wherein, at the QOS traffic layer, said controller further polices admitted traffic based upon respective traffic flow identifiers to ensure that the admitted traffic does not exceed respective second QOS thresholds. Having a second QOS corresponding to a second traffic identifer to control traffic in a QOS threshold range is well-known in the art.

In claims 10, 21 and 34, Bahl discloses the internal QOS metric comprises at least one of available power, available bandwidth, recent error rate, and recent delay (adjusting power as computer 120 is moving away from the base station or to the base station). See col.9, lines 5-10.

In claims 11, 22 and 35, Bahl discloses at the QOS packet coding layer, said controller: encodes data using a forward error correction (FEC) algorithm to generate error correction data for the data based upon the QOS threshold (sender encodes error correction information into the transmitted packet using FEC, see col.8, lines 16-25). Bahl does not disclose interleaving the error correction data and the data prior to transmission thereof. Interleaving error correction data before transmitting is well-known in the art. Therefore, it would have been obvious to one ordinary skilled in the art to interleave error correction data into the encoded data before transmitting into the Bahl in order to transmit confidential data to receivcer and prevent other receivers from receeiving it.

In claims 12, 23 and 36, Bahl discloses at the QOS route selection layer, said controller performs load-leveling on outgoing data based upon the QOS threshold (computer 120 determining the load of network such as number of users currently using the network) and an energy usage level required to transmit the outgoing data (computer 120 measuring signal strength transmitted from base station to obtain information about network and the base station). See col.11, lines 15-25.

In claims 13, 24 and 37, Bahl does not dislose said wireless communications device operates over a plurality of channels; wherein the selected route is associated with one of the plurality of channels; and wherein, at the at least one lower protocol layer, said controller cooperates with said wireless communications device to scout at least one other available channel when a QOS level of the selected route falls below the QOS threshold. It is well-known in the art to use a mobile device to communicate with another via one of a plurality of channels. When the signal received by the mobile device is weak, the mobile device can switch to another channel which can improve the communication.

Claims 2, 15 and 26 are rejected under 35 USC 103(a) as being unpatentable over Bahl (Pat. 6629,151 B1) in view of Ciscon et al. (pat. 6,832,249 B2), and further in view of Ogier et al. (Pat. 6,845,091 B2).

In claims 2, 15 and 26, as explained by Bahl in claim 1, data link layer 110 (fig.2) does not select between a unicast mode and a multicast mode. Ogier et al. disclose in Fig.2 that data link layer 54 supports unitcast mode, multicast mode between routing nodes 18 in an ad-hoc network. (See col.9, lines 22-30). Therefore, it would have been obvious to one ordinary skilled in the art support unitcast mode, multicast mode in ad-hoc network of Bahl.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
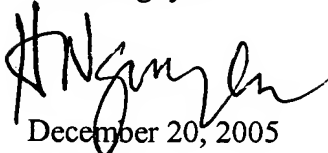
David Kammer (US Pat. 6,826,387 B1)

Larsson et al. (US pat. 6,751,200 B1).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Nguyen whose telephone number is 571 272 3092. The examiner can normally be reached on Monday-Friday from 8AM to 5PM. The examiner can also be reached on alternate

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan, can be reached on 571 272 4032. The fax phone number for the organization where this application or proceeding is assigned is 571 273 8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hanh Nguyen

December 20, 2005

HANH NGUYEN
PRIMARY EXAMINER